

國立臺北科技大學九十六學年度碩士班招生考試

系所組別：1202 製造科技研究所

第二節 材料力學 (選考) 試題

第一頁 共一頁

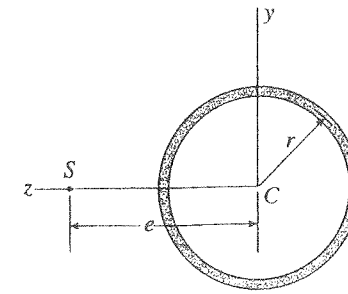


Figure A

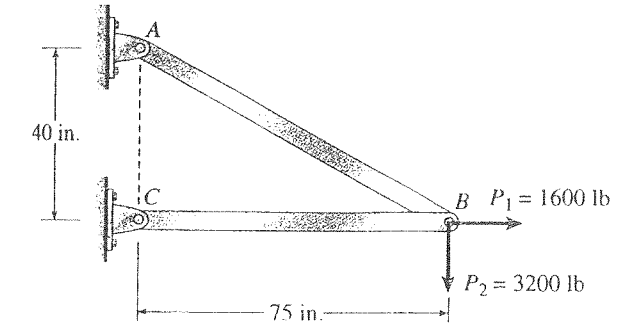


Figure B

注意事項：

1. 本試題共四題，配分共 100 分。
2. 請標明大題、子題編號作答，不必抄題。
3. 全部答案均須在答案卷之答案欄內作答，否則不予計分。

1. (25%) The cross section of a slit circular tube of constant thickness is shown in figure A. Determine the distance e from the center of the circle to the shear center S .
2. (25%) The truss ABC supports a horizontal load P_1 and a vertical load P_2 shown in figure B. Both bars have cross sectional area $A = 2.50 \text{ in}^2$, and $E = 30 \times 10^6 \text{ psi}$. Determine (a) the total strain energy U . (b) the horizontal and the vertical deflection of node B.
3. (25%) Draw the shear-force and bending-moment diagrams for beam ABCD (see figure C), and find the shear force V_m and bending moment M_m at the midpoint of the beam. (本題無需另外數據)
4. (25%) What should be the stiffness k of the spring in order that the maximum bending moment in the beam ACB (see figure D) will have the smallest possible value? Suppose the beam have the flexural rigidity EI .

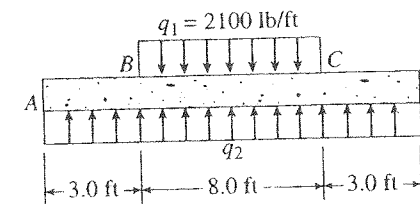


Figure C

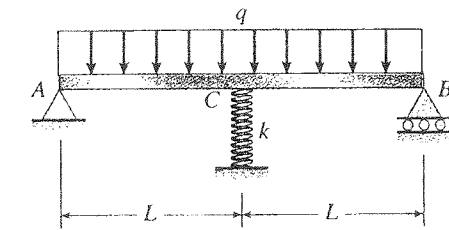


Figure D